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No. 6.—ANTARCTIC AND SOUTHERN EXPLORATION.

By the Hon. P. G. KING, M.L.C., F.R.G.S.

(Read Wednesday, January 12, 1898.)[*Abstract.*]

SINCE Dr. Nansen's return in safety from his attempt to reach the North Pole, by means of what Sir William Hooker described as a "wide departure from any plan which had been put in practice for the purpose of Polar discovery," the attention of the scientific world has been directed to what may prove to be the more accessible fields of the Antarctic Circle, as evidenced by the conclusion arrived at during the meeting of the Anglo-Australasian Conference which was held at London in July last in the presence of all the Colonial Premiers.

Sir Clements Markham, the President of the Royal Geographical Society, with a number of distinguished fellow-members, has been, and still is, advocating the equipment of an expedition towards the South Pole for the purposes of scientific geographical research; such expedition to have especially in view the important object of closely noting the phenomena of terrestrial magnetism. This duty was entrusted to Captain James Ross, R.N., in 1841. Yet, notwithstanding the valuable results then obtained by that commander, and by others since that time, there still remains a wide field for further investigation.

It will be remembered that Humboldt, in 1828, established a small magnetic observatory at Berlin, and concerted with it far and near able observers of the magnetic variation. Humboldt was thus the first to open the way to our modern knowledge of terrestrial magnetism. He was followed by Professor C. F. Gauss and William Weber, who, with an observatory at Göttingen, joined in the general work; they furnished descriptions of their instruments and published a valuable treatise upon them.

The subject of southern exploration can never be approached without bestowing a thought upon the adventurous seamen who in former years, fought their way into the untraversed southern high latitudes. First on the list stands Captain Cook, who, in 1774, in his small vessel, reached the latitude of 71° S. Next is the somewhat forgotten name of James Weddell, a master in the Royal Navy, who, in a private expedition, in the "Jane," a brig of 160 tons, with a consort cutter of 65 tons, passed Cock-skin, reaching to the parallel of 74° 15'.

Enderbys' whaling-ships, with Balleny, Bellinghausen, Biscoe, and Lieutenant Wilkes of the United States Navy, followed in 1839-40.

Her Majesty's ships "Erebus" and "Terror," under the command of Sir James Clarke Ross, R.N., who discovered the north magnetic pole, visited this region in 1841-42. He discovered and named many important points, such as Cape Adair on the mainland, Possession Island, and others, also the volcanic mountains.

The voyage of H.M.S. "Challenger," in 1874, under the command of Sir G. Nares, R.N., must not be overlooked, though Sir George did not pass beyond the northern boundary of the South Frigid Zone, in longitude 78° E. The lowest temperature registered on this occasion by Lord George Gordon was 22° Fahr.

It will be remembered that the early search for a southern continent originated in the supposition that the great extent of dry land in the Northern Hemisphere required a similar area in the southern, so as to constitute a counterbalancing weight and thus preserve the equilibrium of the globe. Cook and others dispelled the idea generally, but Sir James Ross discovered an extent of connected land to warrant the belief that southward of his "South Victoria," and eastward and westward of it, there was an area of ice and snow capped land sufficient to satisfy the assertions of those who believed in the necessity of a balancing weight.

But whether it is necessary or not that such a continent, or more than a continent, once existed, there is now little doubt from the evidence given by animal and vegetable life that it did exist; the same genera and species occur in such now widely-separated lands as South Africa, South America, Australia, and New Zealand. Professor Huxley was so satisfied with this that he has even given to such an extensive range of supposed dry land as would be required to connect those parts, the appropriate name of *Notogaea*.

The Admiralty does not, at present, hold out any promise of assistance with ships, officers, or men, but Parliament would probably supplement any private contributions with material aid.

On the colonies immediately interested great expectations are formed, though none of the Colonial Premiers at the Conference alluded to gave much encouragement.

It is not to be supposed that there will be any difficulty in finding a reliable and competent leader to take charge of such a venture, or of finding a crew well versed in the various necessary branches of science. The leader need not expect to go through all the hardships and risks that were encountered by Fridtjof Nansen, but he must be prepared to push his way beyond where his ship or steamer may be able to reach. A captive balloon could only be used from the ship to show where he might go to beyond her.

For all useful purposes it is not necessary that the explorers should waste much time in trying to reach the earth's axis, a mere mathematical point ; it would be sufficient for all scientific purposes that an approach to it should be made within three or four degrees of latitude.

It is curious to reflect what would be the experience of those, if any, who should happen to reach this mathematical point, the actual position of which could only be determined by an altitude of the sun, giving as its zenith distance the complement of 90° of its declination for its latitude. The sun itself from such a point could have no change in altitude except such as was daily caused by increase or decrease of its declination or motion on the ecliptic, coupled with its motion in right ascension. As for "time," the explorers would have to make their own, being unable to obtain an hour angle from any of the heavenly bodies ; they could get no apparent time, but they might get an approximate time by observing a lunar distance and getting Greenwich time from a nautical almanac. Having thus obtained Greenwich time, it would thenceforth be their time, and the meridian of Greenwich could be determined as their starting-point. Longitude, they could have none, being at the convergence of all the meridians. Standing at the South Pole their only line of vision would be northerly along a north meridian line.

I may, perhaps, remind you that the so-called N. end of the needle is also termed the "marked" end of the needle or North-seeking Pole, and in France the north-seeking end is termed the Austral or Southern Pole, and the south-seeking end the Boreal or Northern Pole.

It is interesting to read Sir J. C. Ross's accounts of his magnetical observations. The fixing of the site of the south magnetic pole would naturally be the leader's ambition.

Various positions have been assigned to it. Duperry, the French navigator, in 1825, had, several times, crossed and recrossed the magnetic equator, and from observations of variation and dip, had calculated its position. Professor Gauss, in his study at Göttingen, had also assigned a position, but no one quite agreed with Sir James Ross's observations. His approach to it is graphically described in the account of his voyages.

"We were in latitude $76^{\circ} 12'$ S. longitude 164° E. ; the magnetic dip $88^{\circ} 40'$, and the variation $109^{\circ} 24'$ E. We were, therefore, only 160 miles from the Pole. It was painfully vexatious to behold at an easily accessible distance, under other circumstances, the range of mountains in which the Pole is placed. I felt myself, however, compelled to abandon the perhaps too ambitious hope, that I might plant the flag of my country on both the magnetic poles of our globe."

In his report of his discovery of the north magnetic pole in 1831, he says, "The north end of the horizontal needle pointed north 57° W. ; magnetic dip had increased to $89^{\circ} 41' N.$; these observations enabled me to determine which way we should proceed, and the distance that lay between us and the great object we had in view." On the 1st June, 1831, he camped in latitude $70^{\circ} 5' 57'' N.$ and longitude $96^{\circ} 46' 45'' W.$, the dip was $89^{\circ} 59'$, or within one minute of the vertical, the horizontal needles being perfectly inactive.

Deep-sea soundings will occupy much attention, and it will be curious to find that great depressions in the ocean-bottom are found in connection with such volcanic action as must from time to time, occur in the vicinity of such volcanoes as Mount Erebus, of 12,000 feet elevation, and Mount Terror of 7,000 feet.

Whenever the proposed expedition from England is fitted out, and gets away upon its field of operation, the greatest interest in it will be taken by all the Australasian Colonies, not from any expected commercial advantages so much to be gained as from an earnest regret that the South Polar or Antarctic Circle should exhibit so large a blank, in a geographical point of view, as it does.

No. 7.—THE DISCOVERY OF NEW GUINEA BY ANTONIO DE ABREU.

By J. R. McCLYMONT, M.A.

(*Read Wednesday, January 12, 1898.*)

THE various methods of teaching and of studying geography may be described as—Pictorial, Descriptive, or Historical.

The Pictorial method is that which teaches by means of maps—more or less highly conventionalised representations of the surface and outlines of the earth. Many early maps, between the twelfth and the sixteenth centuries, were mere mnemonic diagrams. A circle with a few radii represented the distribution of land and water. Sometimes the zones were named, at other times the known continents. Then the outlines of the known continents were drawn, more or less vaguely. Contemporaneously with these mappemondes there appear, in the fourteenth century, portulani, or hydrographic charts of a high degree of excellence, called forth by the requirements of an extending commerce. These are principally charts of the Mediterranean, and amongst them those of Pietro Vicente, 1311, and of Dulcert, 1339, already presage the highest attainments of modern hydrography.

One objection to maps is that they afford to the theorist a ready means of illustrating his pet theories, and this fact has been largely taken advantage of in all times. Islands, and even continental land of great extent, have been represented on maps of quite recent date, although these have no existence. Thus the islands Dina and Marsevin appear on maps in use at the present day, and an Antarctic continent is pourtrayed upon some of them with as great definiteness of outline as is given to Africa or to Australia. There exists also a tendency to convert a map into a mere index of place-names without the advantage, which an index possesses, of alphabetical arrangement.

It is only fair to add that the construction of maps in relief does much to remove the objection on the score of conventionality. A relief map constructed, without distortion, upon a natural scale would be, perhaps, the highest achievement of the Pictorial system.

A method of teaching geography in which a portion of the earth's surface is used as if it were a relief map, and from that portion the whole explained—such a method is a development of the Pictorial. Instead of teaching from a picture, the pupil, by this method, is taken out of doors and taught directly from Nature the facts of geography, and if desired, of physiography also. Whatever can be said in favour of bringing the pupil in actual contact with the subject-matter of his studies may be said in favour of this method,—the logical extension of which would be teaching by means of foreign travel. Unfortunately, the difficulties and the expense attendant upon travelling effectually prevent its general adoption, and I do not suppose such a method is ever practised preceptorially except on a very limited scale, and then chiefly in connection with archaeology and hagiology.

The method of foreign travel being impracticable, its place is supplied by the second principal method, namely, the Descriptive, which is generally used in association with the Pictorial. Every book of travels is an aid to the Descriptive system of teaching. Such books, if they happen to be of ancient date, are commonly supposed to come within the domain of historical geography. They do come within its domain as materials for the historical geographer to work with, but they are not historical geography properly so called, for that implies the critical comparison of such materials, and cannot exist as a complete system until every portion of the earth has been scientifically explored, and every extant geographical monument of the past has been elucidated.

The third method,—the Historical—is one of private study, rather than of public tuition, although I can conceive of its being adapted to public tuition in conjunction with the other methods. This method, I venture to think, impresses the facts upon our mind in a more forcible way than any other practicable method.

For it aims at acquiring a knowledge of the whole history of the discovery of the earth by civilised man, and so has an educational thoroughness about it which cannot be surpassed. To know the coast-lines, say of South America, as they appeared to successive geographers, from Columbus onwards, will be to know them much more thoroughly than if I had received them into my mind as a finished product, and I will be possessed of the whole process, by means of which that product has been evolved. This is to watch the manufacture of a porcelain vase from the clay through all the processes of moulding, painting, and firing. The other plan is to look at it when it is finished and exposed in the show-room. The historical method links the study of the earth with the study of man, not only as a living entity, but also as a sentient being. There is no human feeling, no aim, nor aspiration that has not been awakened for good or for evil in the course of geographical discovery. The study of it reveals the plans, the antagonism, and the alliances of nations.

I shall now give you an example of the use of the historical method, as applied to South-western New Guinea and Prince Frederick Hendrick Island—the cradle of Australasian discovery. Time will only permit me to deal with the earliest period of its history, that namely, in which the Portuguese, under Albuquerque, having taken Malacca, after an arduous investment, despatched three vessels in November or December, 1511, to explore the Eastern Archipelago, and to open up a trade with the islands. A native junk, commanded by a Malay named by Barros Nehoda Ishmael, either preceded or accompanied the other vessels in order to inform the islanders that Malacca was in the hands of the Portuguese, and that they would find a market there for their wares. Antonio de Abreu, in the *Santa Caterina*, was placed in command of the entire expedition, with Francisco Serrão, and Simão Affonso Bisagudo, in command of the two accompanying vessels. There is an account of this voyage in the "Discoveries of the World," by Antonio Galvano, who was captain or governor of the Moluccas, from 1537 to 1540. When he wrote his treatise he was living in great neglect and poverty in a hospital in Lisbon, and the manuscript was bequeathed to his friend Francisco de Sousa Tavares, by whom it was published in 1563, six years after the death of the author. Some of the information which it contained relative to voyages to the Moluccas was gathered directly from those who had taken part in them. This was the case, for example, with respect to the voyage of Alvarado, in 1537, and that of the survivors of the vessel commanded by Hernão de Grijalva. Galvano, who had spent his days, and also his private fortune, in the service of John III, in the East, and who had refrained from amassing wealth for himself as seems to have been the practice of most of the Portuguese

officials in the East at that time,—Galvano was coldly received by his sovereign, and was refused the moderate pension for which he petitioned. Being thus in antagonism with the authorities governing Indian affairs he was not under any official restraint, and he records discoveries in his book which are not recorded by the official historians of his time, because to record them was to place information at the disposal of Spain, which might have been taken advantage of to the detriment of Portuguese conquest and commerce.

It appears, then, from the narrative of Galvano, that Abreu, on leaving Malacca, steered a south-easterly course across the main strait, and then passed through the strait of Saban. "Salat" is the Malay word in general use for "strait"; so the Portuguese called all the islands which they left on the port side "Los islas dos salites,"—the Straits Islands. Upon issuing from this strait, Abreu directed his course towards Java, and ran eastwards along its north coast as far as Agaçai, which Valentijn identifies with Gresik, near Sourabaya. *Oud en nieuw Oost-Indien, Deel II; Moluksche Zaken, Hoofdstuk ii.* There he shipped Malay and Javanese pilots, and, passing thence through the Strait of Madura, continued along the north side of the Sunda Chain as far as Wetter. Galvano mentions, amongst the islands which they passed near or sighted, Bali, Anjano, which Mr. Tiele identifies with Kangeang, Sumbawa, Kalao, Solor, Mauluca (perhaps Malua or Ombay), Wetter, and Rosolangium, which I am inclined to think may be a corruption of Nusa Kalkoun, just as we find Nusa Telo corrupted into Rosetelo, and Nusa Laut into Rosalao. Against this must be placed the authority of Barros, who identifies Rosolangium with Rosengain.

Other chroniclers of this voyage now conduct the ships to Amboyna, but Galvano states that the voyage was continued eastward to the Aru Islands. Not only does Galvano's carefulness and trustworthiness make it morally certain that his statement is correct, but also the fact that he mentions a local detail, which shows that he knew what group he was writing of:—"They came to other islands, the Arus, from which the dried birds come, which are so highly esteemed because of their feathers." The dried birds, "Os passaros myrrados," were no doubt the great Paradise Birds, *Paradisea apoda* of Linnæus, so named in 1760 from dried specimens. Maximilian Transylvanus wrote in 1523 that the people of Marmin—by which possibly Aru is meant—hold the bird in such reverence that they believe that by it their chiefs are safe in war. They reverenced the bird because the Mahometan Malays had told them that it was born in Paradise, and that Paradise was the abode of those who had died, and in consequence of this doctrine, and because Mahomet promised such wonderful things concerning this abode of souls, the Marmin

chiefs embraced Mahometanism. The legend about Paradise being the birthplace of these birds, and that other form of the same legend to the effect that they never rested upon the ground, nor upon anything that grew upon it, but that they sometimes fell dead from the sky, arose probably from the Aru methods of killing and preserving the birds ; for the islanders conceal themselves under mats of leaves placed in the trees which the birds frequent, and shoot them with blunt-capped arrows, so that they are killed without any wound and without blood being shed. Then the wings and feet are cut off, and the skin is preserved by smoking, and perhaps in Galvano's time by embalming, as he calls them "Passaros myrrados." As the skins were not seen in a complete state, with wings and feet—by the traders, it was supposed that the birds possessed neither, but that they floated through the air in a beatific way.

There are traditions extant in the Arus to the present day respecting the contact of the islanders with certain strangers who came to Wanumbai before the Bugis came to trade there. This must have been before the time at which Galvano wrote, for the dried birds of which he speaks were no doubt exported by the Bugis. These strangers "were wonderfully strong, and each one could kill a great many Aru men, and when they were wounded, however badly, they spit upon the place, and it immediately became well." And they made a great net of rattans, and entangled their prisoners in it and sunk them in the water ; and the next day, when they pulled the net up on shore, they made the drowned men come to life again and carried them away. (*Wallace's Malay Archipelago*, chap. xxxi.) It is very probable that these legends originated in a Portuguese visit to the Aru Islands ; indeed, it may have been this very visit of Abreu which gave rise to them. They are to us very childish and absurd, but it must be remembered that many of the legends believed by European writers in the seventeenth century are much more childish and absurd than these.

Galvano's statement about the Aru Islands is not so important, as the further statement that Abreu came "to other islands which lie in the same parallel of south latitude in 7 or 8 degrees, and they are so close to one another that they appear all one land."

Abreu then, it appears, continued his voyage eastward from the Arus. Most probably he directed his course to the south of these islands, leaving their shallow tripang banks to the north. In five or six days' sailing he would be off the coast of New Guinea. At first the land appeared to be continuous, but as he came nearer he discovered that there was more than one island. The only break in the coast-line at this part, namely between 7 and 8 degrees south, is the northern entrance of Dourga Strait, between New Guinea and Prince Frederick Hendrik

Island. Here, then, I suppose Abreu to have arrived. The southern outlet of the strait is in about $8^{\circ} 20' S.$, and because this is a higher latitude than that indicated by Galvano, as well as for another reason which I shall adduce later on, I am inclined to think that Abreu did not pass through the strait, but that he only proceeded to a point about 15 miles within the entrance, that is, to about $7^{\circ} 36' S.$ At this point he would have proceeded far enough to ascertain that he was in a strait or deep inlet, not in the estuary of a river. As to the value of his discovery from an Australian standpoint, that may be roughly indicated by recalling the fact that in Dourga Strait Abreu was within 320 miles of Cape York, or 50 miles nearer to Australia than Columbus was to America when he discovered San Salvador in his first voyage.

At New Guinea (a name which only appears at a subsequent period) Abreu had accomplished a course of more than 500 leagues, but from what point Galvano does not definitely state. The distance from Dourga Strait to their halting-place at Gresik would be about 500 leagues or 2,000 miles.

From the New Guinea coast Abreu directed his course towards Banda, and passed to the north of the volcanic island of Gounong Api—a name which, with the usual uncertainty of the Portuguese about native names, is corrupted by Galvano or his editor into “Guamape.” Banda, however, is left behind for the present, and the ships continue their course to Bourn. This island should have been the point of departure for Ternate had Abreu been desirous of proceeding to the Moluccas proper, but instead of doing so he retraces his course in order to visit Amboyna, then “coasted along a coast there which is called that of Muar d’ Amboyna,” apparently Ceram, the western peninsula of which, Hoewamo, was sometimes called “Batochina de Muar.” About 10 miles west of the narrow passage of Kebba Kebba, between Keffing and Ceram, there is a round bight with a high cliff on the east side of it, on which stood the village of Guliguli, whilst at the bottom of the cliff lay the associated hamlet of Keliwalanga. In this harbour Abreu anchored.

Valentijn tells us that the people of this part of Ceram were more like Macassar men than like the other Ceramese, but he is probably referring to settlers from Celebes, who came here at a later period than that of the visit of Abreu. This part of Ceram became a great trading centre for the Bugis, and they, as well as the people of Goram and Ceram Laut, made voyages to Onin, in the west of New Guinea, in search of massoi bark, wild nutmegs, and boxes of native manufacture ornamented with shell-work. In the seventeenth century the inhabitants of Guliguli made themselves obnoxious to the Dutch by their smuggling practices, and could not be persuaded to obtain permits to carry on their old

trade from the officials of the Company. As a chastisement the Dutch burnt Guliguli in 1621, but the Bugis replied by fortifying their cliff. In 1659 three of the Company's ships and a fleet of kora-koras was sent against them and dislodged them from Guliguli, but they speedily established another fortress at Solothay, 2 miles further east. This place was also taken and destroyed, and a Dutch fort erected on the site of Guliguli. When peace was at last made a few people returned to Guliguli, but their numbers were so greatly reduced by the attacks of the Dutch and the raids of Kilwaru slave-traders that in 1705 Willem de Rieu, who was conducting a hongi round Ceram, found only one house standing on the cliff and two houses in Keliwalanga. *Valentijn's Oud en nieuw Oost-Indien* II, ii, 2, and iv, 4. In this bay, then, Abreu landed and took possession of a village. Dead bodies were found suspended in the houses, "for," says Galvano, "here they eat human flesh." This was a hasty and unjust conclusion to draw, partly based, no doubt, on the dictum of Ptolemy that the inhabitants of the Javas were man-eaters, whilst Ptolemy in turn drew his information from Arab traders, always ready to magnify the barbarism of the non-Mohammedan races with whom they came in contact. I am inclined to think that the dead bodies which Abreu saw were awaiting burial. The account which is given by Mr. H. O. Forbes of the burial customs of the Timorese throws some light on this matter. When a death takes place amongst them not only must every blood relation of the deceased present a gift to the departed, but a death feast, and also a burial feast, must be celebrated. The death feast alone is sometimes on so extensive a scale that the family is reduced to poverty by it, and cannot afford to give the burial feast for a long time afterwards. Indeed this duty is sometimes postponed so long that it is only carried out by remote descendants. But as custom requires that the body shall not be interred until the feast can be given, it is folded up at the hips, inclosed in a mat, and suspended by a cord underneath a small pent-house formed in the branches of a tree, where it is left hanging until such time as the burial feast can take place. (H. O. Forbes : "*A Naturalist's Wanderings in the Eastern Archipelago*," p. 435.) From what I have gathered about Guliguli and its inhabitants, I am inclined to think that Abreu's visit took place before any migration of Malay settlers to that place, and that the people with whom he came in contact were indigenes of that division of the Papuans known as brown Papuans and sometimes as Alfuros. I have dwelt thus long on Guliguli and the vicissitudes of its history because it is an interesting village from many points of view—from a geographical, a historical, and an ethnographical—and because it is one of the few spots in the world which can be identified in connection with a great discovery voyage of the

sixteenth century. At Guliguli the ship commanded by Serrão—an Indian vessel taken at Goa—was burnt, “for she was old and rotten.” Other accounts say that the vessel was wrecked and the crew taken on board the two other ships, which then proceeded to Banda, where at “Lutatão” the Portuguese were well received by the natives. The main Banda group consists of three islands—a larger and two smaller ones. One of the latter is merely a volcanic cone, named Gounong Api, a generic term signifying mountain of fire, borne by several islets of the archipelago. Gounong Api, together with Bandaneira and Lonthoir or Great Banda, form a secure land-locked harbour of great beauty, its shores clad with vegetation, except where the volcano raises its barren eminence above the bush-covered lower zone. “Lutatão” is probably a corruption of Ortattan, a village on the north coast of Great Banda and one of the principal trading centres of the group in the sixteenth century.

Banda is the home of the nutmeg, and here Abreu was able to obtain a full cargo of nutmeg and mace as well as of cloves. Here, too, he erected on the beach a stone pillar with the arms of Dom Manoel, as he had also done at Gresik and in Amboyna, in token that these places were henceforth under the supremacy of the Crown of Portugal. Having taken in his cargo, Abreu sailed for Malacca. Why he did not proceed to the Moluccas proper is uncertain. Castanheda attributes it to unfavourable weather. Others say that his cargo was fully made up at Banda. But he seems to have had some special reason distinct from these for curtailing his voyage, because he wished to make great haste to return to Portugal, in order personally to convey to the king the assurance that the way to Banda was an open one. But Maffei relates that he died on the homeward voyage, “deluded by a vain hope.” As for Francisco Serrão, he was either separated from the other ships by accident or parted company designedly, and, after many exciting adventures, found his way to Ternate, from which place he maintained an important correspondence with his friend Magellan, and where he died in 1521.

When Abreu took possession of the island of Banda, he fixed its position by implication; for, by treaty with Spain, the Portuguese were only entitled to annex territory for the space of 180 degrees eastward from a line of demarcation fixed in 1494 by the capitulation of Tordesillas at 370 leagues west of the Cape Verde Islands, or in about $47^{\circ} 30'$ W. of Greenwich. After the discovery of the Amazon by Vicente Pinçon in 1499, the line was considered to fall through the western mouth of that river, or about $2\frac{1}{2}$ degrees too far to the west, for the fiftieth meridian of west longitude crosses the western mouth. If we measure 180 degrees eastward from that point, we arrive almost exactly at Bandaneira, which lies under $129^{\circ} 50'$ of east longitude.

Here we gain a glimpse of at least one reason why the Portuguese historians make no reference to Abreu's visit to the Arus and New Guinea. These places lay outside of the Portuguese Hemisphere, and it would not have been expedient to enlighten the Spaniards regarding newly-discovered land within their boundary. For the Spaniards did not accept a delimitation which placed the Moluccas outside of their hemisphere. It must be remembered, in justification of the Spanish claim, now known to have been erroneous, that the existence of the wide Pacific, and all its enchanting islands, was not even surmised at the period of which we speak. It was not till Magellan had actually crossed it that the Spaniards had any idea of the distance from the new world discovered by Columbus to the old world of Ptolemy and the ancients ; and even after that voyage, and in consequence of miscalculations of longitude made in the course of it, the width of the Pacific was greatly under estimated.

To find a short and direct passage to the much-coveted Islands of Spices was the great ambition both of Spaniards and Portuguese before the eventual discovery of Magellan. Columbus held that a strait existed through the Panama Isthmus, misunderstanding, perhaps, the accounts which he received from the Indians of a sea beyond the isthmus. One of the objects of his last voyage of 1502 was the discovery of such a strait. Further south, to the coasts of Brazil and Patagonia, the Portuguese, from 1501 onwards, were continually sending out expeditions in search of such a passage, and several breaks in the coast-line, such as the mouth of the Rio de la Plata and the Gulf of St. Mathias, had been taken for the entrances of straits.

The idea of finding a strait by sailing eastward from the so-called South Sea into the Atlantic occurred to the Spaniards immediately after they had established themselves in Darien. And it is not unlikely that the idea of making the discovery by sailing round the Cape of Good Hope and on eastwards until they reached the Columbian land-barrier may have occurred to the Portuguese.

Albuquerque, we know, held that the distance from Malacca to Brazil was only a short one. This appears from one of his letters to Dom Manoel. (*Cartas de Albuquerque*. I, 64-65.) And there would be nothing unreasonable in conjecturing that Albuquerque had ordered Abreu to sail on till he reached the new world with the object of reconnoitring it in the hope of finding a passage through it, should the time at his disposal permit. That Abreu thought he had made a discovery of some importance is evident from his desire to return at once to Dom Manoel with the news that the way to Banda was open. But the eastern route to Banda had been known to be open ever since the discovery of the Cape route. It was the western route that it was feared was closed by intervening land of great extent and to say that the

way to Banda was open before the Pacific Ocean had been even seen could only mean that Banda was attainable by sailing westwards from Europe as well as by sailing eastwards.

In concluding the examination of this voyage, let us inquire what trace it has left on the cartography of the period. I only propose to deal now with the New Guinea portion of the voyage. I would remark by way of preface that experience has shown me that it is only safe to accept the evidence of maps when the indications of discoveries which they contain are supplemented by the journals of the discoverers, or by the well-tested evidence of historians belonging to the period in which the discovery was made.

The earliest reliable representation of this part of the New Guinea coast known to me is to be found on a map entitled "Asia Partium Orbis Maxima," in the atlas "Speculum Orbis" of Cornelis de Jode, Antwerp, 1593. The same outlines, now united to the eastern portion of New Guinea so as to form one large island or portion of a continent, are repeated on the chart, "Moluccæ Insulae" by N. J. Visscher, 1617, reproduced in Mr. Coote's "Remarkable Maps," Part II. They represent New Guinea very rudely, but place that island in its true relation to neighbouring islands of the Eastern Archipelago.

Now the only recorded voyage to the extreme south-west coast which took place in the sixteenth century was that of Abreu; hence, until adverse information is forthcoming, I think we may venture to associate these maps with his voyage. The entrance of a deep inlet is placed to the south-east of the Arus, approximately in the position of the entrance to Dourga Strait. But if Dourga Strait is intended, the inlet is erroneously prolonged in a north-easterly direction. Perhaps this may be explained by supposing (as I have already done on other grounds) that Abreu only reached that portion of the strait—about 15 to 20 miles within the northern entrance—which trends in an E.N.E. direction, and that this direction was supposed to be the constant one.

Time will not permit of my tracing in detail the subsequent history of this geographical problem; I must content myself with giving you a few leading dates in connection with it:—

1511-12. Voyage of Abreu.—New Guinea discovered, and regarded as a portion of the Columbian land-barrier.

1519-22. Voyage of Magellan and Del Cano.—The Pacific Ocean crossed, and New Guinea proved not to be a portion of that barrier.

1606. Voyage of Willem Jansz.—Abreu's discovery of New Guinea corroborated, and the land supposed to be continuous with the south land known later as New Holland and Australia.

1762. Relation of De Torres showing that in 1606 he discovered the separation between New Guinea and Australia found at Manilla.

1825-26. Voyage of Kolff.—Re-discovery of the northern entrance of Dourga Strait, now so named.

1835. Voyage of Kool.—First passage through Dourga Strait, demonstrating the separation of Prince Frederick Hendrik Island from New Guinea.

I have tried to say something which would tend to remove the impression, prevalent in some quarters, that historical geography is a mere antiquarian fad ; I uphold the position that it is eminently practical. Perhaps I could not better illustrate that position than in this manner :—Let us suppose that Dourga Strait had never been re-discovered to this day. The supposition is not an unreasonable one, since it was only discovered in its entire length sixty-three years ago. Now I hold that we have good grounds for believing that any intelligent and properly qualified captain of a ship or steamer having in his hand the account of Abreu's voyage as written by Galvano, and being furnished with the explanation of a few obscure points in the narrative, could sail from Sydney or any other port to the “islands lying in the same parallel” as the Arus, and there discover Dourga Strait. A result of that kind, the possibility of which seems almost self-evident, would surely be sufficiently practical to demonstrate the utility of this study to the most utilitarian mind.

Antarctica

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